

# Jeypore Kalajeera:

## Orissa's Gift to Quality Rice Lovers



*Krishna Bisharad Sanman*  
ICAR, New Delhi, 2002



*Equator Initiative Award*  
UNDP, Johannesburg, 2002



*Genome Savior Award*  
PPV&FR Authority,  
Government of India, 2006

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**with the active support of a number of tribal farmers, both men and women of several hamlets of Jeypore Block, Koraput District**

## Jeypore Kalajeera: Orissa's Gift to Quality Rice Lovers

Koraput district in Orissa is known for rich biodiversity and natural resources, of which landraces of rice occupy a prime position. However, Koraput also tops the list of poverty syndrome districts of KBK (Koraput-Bolangir-Kalahandi). People find it difficult to meet even their daily food requirements, particularly, rice. To remedy this contradictory situation, conservation, genetic enhancement and gainful utilization needed serious attention.

MSSRF was concerned with this biodiversity-rich yet food-hungry situation. As an institution committed to biodiversity-led poverty reduction on a pro-nature, pro-poor and pro-women work frame, MSSRF decided to work towards ameliorating this situation. With a generous funding by the Swiss Agency for Development and Cooperation (SDC), MSSRF with its coordinating center at Jeypore site started work in Jeypore block of Koraput district on a project mode in 1998.

The activity began with the participation of farmers in identifying the most crucial component of crop improvement. MSSRF scientists surveyed, along with tribal farmers, their plots grown to landraces of crops including rice. The major problem was low yields of rice landraces that farmers preferred for consumption. The problems were compounded by non-availability of quality seeds and financial support for proper cultivation. With poor yields of rice resulting in poor income, farmers could not repay loans making them vulnerable for exploitation by moneylenders. It was clear that the prime requirement was to retrieve landraces to profitable yield return.

MSSRF evaluated the cultivation practices of rice, driven by farmers' Indigenous Technical Knowledge (ITK). Genetic purification of rice landraces and improving methods of cultivation appeared to be the immediate option for improving yields. Hence a few villages around Jeypore were selected for demonstration on a mission mode, of improved methods of

cultivation of rice. Among them, Tolla, Patraput, Pujariput, Baliguda and Mohuli (at initial stages) villages were important. Participatory Plant Breeding (PPB) and to start with, Participatory Varietal purification, was the method chosen to optimize productivity by transforming prevalent methods into those capable of realizing high economic returns.

The project decided to implement all activities with farmers participating with scientists as equal partners. All decisions were taken in coordination and consonance with farmers in PRAs that were held at various levels. Concepts and do-how of modified cultivation were explained in PRAs attended by farmers from all the participating villages; special efforts were made to clear farmers' doubts and answer their questions and concern. This was followed by training and demonstration exercises at each village. Thus farmers, along with scientists, laid two sets of demonstration plots. In one they used scientific methods and in the other set of plots alongside, they raised the crop under their traditional methods.

In plots raised with modified methods, up to 200% improved grain and straw yields were obtained with well-filled seeds, in all the growing ecologies, namely, upland, medium land and low land. In all, about 26 landraces were put to test across 7 villages. Based on an evaluation of yield-related traits in test plots across several villages, farmers and scientists together zeroed in on two best landraces for upland, two for medium land and two for lowland (Table 1).

**Table 1. Farmer participatory selection of two best Landraces of rice for various growing ecologies**

Upland	Paradhan Mora
Medium Land	Sapuri Limbachudi
Lowland	Barapanka Kalajeera

The modified method of cultivation precluded increase in inputs or cost of cultivation. However, farmers needed a couple of seasons to master the technique of row planting in well-spaced rows. Significant increases in yields with potential for good economic returns, realized with no increase in cost, made farmers quite happy. Willingly they planted large areas following new method of cultivation and voluntarily extended the new method to fellow-farmers. Farmers' visit to the demonstration plots and farmer-to-farmer extension of the modified method of cultivation worked exceptionally well in the quick dissemination of modified method of cultivation not only in selected villages but also in many others.

Of the selected landraces, tribals favoured *Kalajeera* for its black colour and good aroma. MSSRF site center at Jeypore kept on display few kilograms (kg) of *Kalajeera* rice in the Orissa Government-sponsored fair, PARAB during 2002. Farmers observed that *Kalajeera* rice was sold out at an attractive price of Rs. 25 a kg. They were thus encouraged to take up *Kalajeera* for commercial cultivation.

MSSRF extended help to farmers in fulfilling this objective. Farmers were given field demonstration on organizing commercial production plots and selecting seeds before harvest. Tolla farmers who volunteered land for seed production were given the training to start with. Participatory extension of that knowledge equipped other farmers with technical know-how and practical do-how of commercial seed production. For example, using the seeds produced during Kharif 2004, 83 farm families spread over 10 hamlets around Jeypore, planted *Kalajeera* seed crop in 66.2 acres during Kharif 2005.

## Marketing of *Kalajeera*

### Current Scenario

MSSRF has surveyed Jeypore local markets of rice including rice merchants who have installed rice hullers in their premises and who usually procure paddy from nearby villages. It was found



that there was specific interest in *Kalajeera*. However, MSSRF has encouraged marketing *Kalajeera* rice only and not paddy. The reason is, in the process of marketing paddy, there is a risk of the farmer-purified landrace passing out of the control of poor tribal farmers. They could then be deprived of their legal rights to own and legally protect the variety. Due sharing of profits made by other agencies procuring and selling *Kalajeera* rice or paddy, could be jeopardized with the possibility of farmers responsible for purification and quality seed production not getting due benefits. Further, seed production by uncontrolled extraneous agencies can be a source of contamination of the genetic purity of *Kalajeera*.

### **MSSRF Intervention**

With a view to offsetting these possibilities, MSSRF has been orienting farmers, through consistent training, to the need for storing seed safely in Village Seed Banks (VSB) and sell only rice. Conscientious scaling up of this training is however needed. Farmers themselves have built VSBs initially in 5 villages that have now grown to 13 villages. MSSRF is keen that those banks are self-managed by farmers. To start with, MSSRF has helped farmers in the village, Nuaguda to set up a seed management committee. The farming community elected Committee members who are also farmers. They are trained by MSSRF, Jeypore staff on various aspects of storing, distribution, and sale of seed in addition to book keeping and other aspects of management. This activity, started in 2003 is slowly gaining ground and would take time to find its strong roots.

### **The Problem of Large Storage**

But Village Seed Banks cannot cater to the need for large-scale storage, like, for example, around 40 tonnes of grain from Kharif 2005 crop. Unless proper storage is available, seeds harvested cannot be saved especially if rain intervenes at or after harvest.

It is therefore very essential that godowns are built, or made available if they are there already. Ideally they should be built initially around villages where there are VSBs. For easy movement of seeds/grain from fields to godown, they should preferably be near to the Kalajeera seed production villages. Resource-Poor farmers of Jeypore tract need help of the Rural Village Godown Scheme of the State Government in this regard.

### ***The Problem of Sustainable Market***

MSSRF had the first experience of the problem of profitable marketing during 2004 when farmers produced around 30 tonnes of Kalajeera paddy. After keeping for their own consumption, 16 tonnes of paddy grains became available for sale. Local markets did not offer remunerative price. Therefore the paddy was hand-pounded by people and sold to fellow farmers in surrounding villages as unpolished rice. Though farmers earned profit, this process is arduous for replication. Further farmers need also to be cautioned about the associated risk of biopiracy if they accede to the offer of free single polishing of paddy (equivalent to hand hulling) by hullers nearby.

Market is becoming increasingly conscious of *Kalajeera* and its current sale value. Local markets prefer polished rice to meet the needs of rural and urban clientele in which case people should be enabled with facilities of hulling machines.

Various levels of purity of *Kalajeera* are available in areas outside the demonstration villages involved with MSSRF. There is then a possibility of fraudulent mix-up with the pure Jeypore Kalajeera. Interim protection like ecomark is essential and urgent and expeditious action by State Government is crucial. This would provide an edge for Jeypore farmers for large scale seed production and marketing in collaboration with State Government agencies.

Marketing problems got compounded during 2006 when production of Kalajeera in Kharif 2005 went upto 45 tonnes and farmers, after reserving seeds and grains for their own

use, offered 29.3 tonnes for sale. Neither was it possible to convert them into hand-pounded rice nor was it feasible to sell to local merchants who offered low price realizing the rise in production.

MSSRF realizing the problem requested the help of the Government to arrange for marketing Kalajeera paddy through Government-controlled channels. Government, in turn, directed NAFED to procure Kalajeera at a favourable price.

But paddy, produced in small plots in various hamlets by tribal farmers, has to be stored in one place for easy lifting. As observed earlier, village seed banks are too small and large godowns are unavailable. Hence MSSRF had to hire a godown of LAMP society at Kundura, get it cleaned and repaired, and paddy was transported there and stored properly. It may be mentioned that Kalajeera produced from pure seeds was uniform and of fair average quality (FAQ) as per the norms of NAFED. After satisfying about the quality, NAFED gave a good price of Rs. 10/- per kilogram of paddy. This is the highest price secured for the first time by poor tribal farmers for a rice landrace.

### ***Urgency for viable arrangement for marketing Kalajeera seed/grain***

The major motivating factor in commercial production of *Kalajeera* by farmers is the remunerative market now prevailing. But all the farmers are unanimous that they must sell the seed and excess grain soon after harvest after reserving for consumption. In fact the production increased to 73 tonnes in kharif 2006 of which 45 tonnes were offered for sale. MSSRF had again to request NAFED for procurement. This time, MSSRF could not arrange a large godown for storing and hence farmers had to be guided to store the produce in the open in 5 pick-up points for NAFED to lift the produce. This path way was exposed to risk of weather-driven possible damage.

With seeds saved by farmers, the area and production of *Kalajeera* are expected to increase considerably during 2007. This would imply that more hamlets would be taking up *Kalajeera*



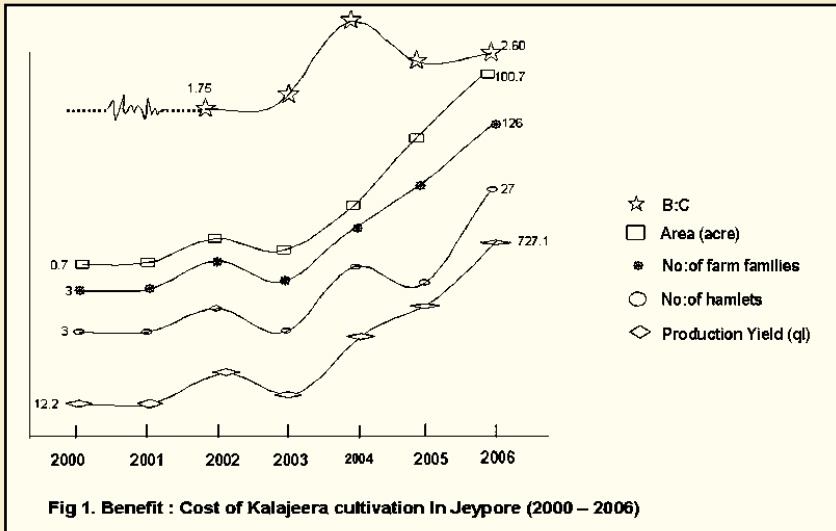
cultivation. Organizing and monitoring modified methods of cultivation, and gathering the produce and storing in large godowns before sale would be beyond the purview and capacity of MSSRF. At the same time, the MoU signed between NAFED and the Govt. of Orissa for procurement of the production of rice landraces in tribal areas (See Appendix 1 of a newspaper report) is a positive option for Koraput tribal farmers.

Enabling this option to translate into economic gains of the tribal poor and thus contributing to increased poverty reduction would be possible only by the State Government, and that would add to its positive achievements.

The poor tribal farming community of Koraput should not fail to receive such Government support. The path laid over the past 9 years using the principles of participatory plant breeding for conservation, cultivation, consumption and commercialization of valuable but vanishing rice diversity in the secondary centre of origin should not end as a blind alley. It should remain a model path for secure and sustainable livelihood and continued conservation of the rice biodiversity.

### *The rise of Kalajeera at Jeypore*

The pattern of growth of Kalajeera at Jeypore during 2000-2006 is quite striking (Fig 1). The number of farm families, area and



production were found to be steadily increasing, particularly from 2004 when marketing channels were facilitated. However, unpredictable and harsh weather of Orissa contribute to inevitable fluctuations. Yet income and benefit:cost ratio remained high and almost stable. More directed help to the tribal farming community and monitoring quality production of Kalajeera is logically expected to give rich dividends.

### ***Evaluation of quality and distinctness of Kalajeera for export***

During a meeting at the Indian Agricultural Research Institute, New Delhi on quality requirements for Basmati rice for export, interest was also expressed for export of aromatic non-basmati rices particularly landraces. A presentation on Participatory breeding of the LR Kalajeera was made in that meeting. M/S Tilda Riceland Pvt. Ltd who has considerable experience in exporting non-basmati traditional varieties came forward to discuss a working plan for evaluating the quality of Kalajeera for export. It may be mentioned here that Bangladesh has been exporting Bangladesh Kalajeera though its origin is not clear. Tilda Riceland agreed to evaluate Kalajeera for quality and export requirements on a two-year project mode under an MoU.

MSSRF desired that this proposition should be given effect to with the knowledge and concurrence of the Government of Orissa. On discussion, the Collector of Koraput District suggested that the MoU should be tripartite and among MSSRF, Tilda and Government of Orissa. A draft MoU was prepared by MSSRF in consultation with Tilda Rice land which was sent to the District Collector. The MoU was whetted both at Koraput District collectorate and Government of Orissa, Bhubaneswar level. With minor modifications, the MoU was signed by District Collector, Koraput on 05 September 2006.

40 samples of Jeypore Kalajeera were collected from plots of various farmers in the hamlets, Baliguda, Tolla, Pujariput, Patraput, Kasiguda, Nuaguda, Taliaguda, Jhalaguda, Kundura and Kasiguda. The material was generated either from MSSRF supplied pure seeds or from the seeds saved by farmers in the earlier season. The quality traits of Jeypore Kalajeera were

compared with those of an exported Basmati variety, *Abhijit* (Haryana Basmati Collection 19). Kalajeera scored better than *Abhijit* in amylose, and alkali score indicating comparative low stickiness, and low time of cooking and softness respectively that are desirable for export. Further, DNA test on the 40 samples testified the purity and homogeneity of Jeypore Kalajeera.

An important result is that there is no variation in any trait between material generated from pure seeds kept by MSSRF and farmer-saved seeds suggesting seed/grain production can safely be done in all villages by farmers using seeds saved by them. Therefore large scale production of Jeypore Kalajeera can safely be programmed in a number of hamlets across Koraput region. It is however essential to test verify the quality of seeds before concluding that the site-specific landrace, Kalajeera can be produced in all areas of Koraput District.

It was also felt essential to compare the quality of Jeypore Kalajeera with Assam and Bangladesh Kalajeera that are in the market (the latter being also exported). It was found that Jeypore Kalajeera ranked superior in alkali score and was not far inferior in other traits (Table 2). Since the purity of Assam and Bangladesh Kalajeera could not be testified, confirmatory evidence with pure material remains to be obtained.

**Table 2. Quality of Jeypore Kalajeera compared to Assam and Bangladesh Kalajeera**

Kala-jeera	Chalkiness %				Total Amylose%				Alkali score			
	JK	AK 02	AK 03	BK 02	JK	AK 02	AK 03	BK 02	JK	AK 02	AK 03	BK 02
JK	-		*		-	*	*		-	*	*	*
AK02	*	-	*			-				-		*
AK03			-			*	-				-	*
BK02	*	*	*	-	*	*	*	-				-

JK – Jeypore Kalajeera; AK02 – Assam Kalajeera (2002); AK03 – Assam Kalajeera (2003); BK02 – Bangladesh Kalajeera (2002)

\* Significantly Superior; empty cells indicate non-significance

Total Amylose - Low total amylose indicates stickiness of cooked rice

Alkali score - Low alkali score indicates hard cooked rice and long cooking time

Chalkiness - High chalkiness indicates high breakage during milling

In a recent discussion at MSSRF, Tilda Riceland informed us that, from the one-year evaluation, Jeypore Kalajeera is fit for export. One more repeat evaluation of quality and DNA test will be done in 2007 for confirmation.

### *Large scale production of Kalajeera*

Participatory breeding efforts were initiated essentially to demonstrate that traditional landraces of rice, for example, have potential to ensure nutritional, livelihood and economic security to the tribal poor and therefore there is a special need for conserving landraces as was once practised by tribal farmers of Jeypore. However during the course of demonstration, training and capacity building, farmers had a chance, as mentioned earlier, to witness the high demand for Kalajeera rice and a high price of Rs 25 a kilogram in a Orissa government fair that triggered their interest to upscale cultivation of Kalajeera. MSSRF acceded to this enthusiasm of farmers and helped them with the basic knowledge of seed and grain, and improved their traditional knowledge of seed selection, and trained them in organizing seed plots and large scale seed production. In the process, Village Seed Banks (VSB) was also set up for storing seeds safely, as noted earlier. The number of farm families and the acreage under Kalajeera spread rapidly. The benefit:cost ratio has been very favourable to farmers (Fig 1). Our experience suggests that one crucial factor responsible for the spread of Kalajeera is the marketing avenue through NAFED facilitated by the Government of Orissa. In this context, it would be worth noting that farmers are growing a number of other landraces like Muktabali, Sapuri, Limbachudi and saving good quality seeds by selection. This only indicates that diversified rice landraces can easily be produced in large quantities to meet the demands of market both in and outside Orissa.

However a number of crucial requirements need to be met that are beyond the capacity of MSSRF but within the purview of the State Government.

But a number of areas need to be addressed to position the strategic support of the Government in an optimal functioning mode:

1. Despite the fact that MSSRF has facilitated sale of upto 45 tonnes of Kalajeera to NAFED, it remains a low volume of trade. This would imply that all tribal hamlets throughout Koraput should be encouraged to grow Kalajeera if real commercial benefits are to be harvested. In addition, if export becomes a real proposition (with a high likelihood), production of the order of two to three hundred tonnes (and even higher) of Kalajeera paddy is necessary. Assuming that the yield level with no additional inputs is 30 quintals per hectare (in a good year), an area of about 1000 hectares would be needed for producing 300 tonnes of Kalajeera paddy. MSSRF, handicapped by limited personnel and resources, found it arduous to monitor production in even 120 acres across 27 hamlets. Therefore, scaling up will be possible only with the active involvement of the State Government.
2. Financial assistance to help farmers to top up their small holdings including organic manures like FYM and vermicompost for seed production would be an integral need. Then production of rice landraces would be organic in the sense that the lands in which the crop is raised are free from impact of chemical fertilizers and addition of organic manures every year would improve the soil profile to levels desired for organic farming. Farmers are expected to reap good returns following modified cultivation methods and therefore should be in a position to repay loans in easy instalments.
3. MSSRF faced considerable problems to store the harvested paddy till the sale to NAFED as the tribal hamlets do not have large grain storage. The Government can construct large rural godowns in select points each covering a few hamlets so that the harvested produce can be stored there for easy pick-up by buying agencies. Until rural godowns are in place, Government can mobilize nearby godowns for the purpose.
4. More than mere large scale production, it is crucial to produce quality grains both for meeting the procurement standards of NAFED and for export. In the tripartite MoU with Tilda Riceland, it is clearly mentioned that Tilda Riceland would first consider the sale price decided in a joint meeting with farmers, the State Government and Tilda Riceland every year. If the sale



price is agreeable, they would buy the whole produce or their requirements; the rest of which can be set for other marketing channels like NAFED or even procurement by Government.

5. This would require that farmers should grow Kalajeera with commitment and following the modified practices of cultivation that MSSRF has put in place. Ensuring this would necessarily involve an intensive monitoring in farmers' plots during the crop season that would be human resources-intensive.
6. An agreed mode of grading the grains and seeds should be put into place to encourage farmers to excel in quality seed and grain production.
7. Farmers being the prime producers of grains and seeds of *Kalajeera*, effective training, capacity building and extension services need to be put into operation in a concerted manner.
8. MSSRF had intense discussions with Jeypore farmers to form a Kalajeera Growers' Association with a set of guidelines and rules to manage production and sale of Kalajeera. This activity being at an initial stage has to be nurtured and brought to desired operational level. If this association is registered and Government provides active support, it can activate a number of value addition possibilities to select landraces of rice that would add income, generate village level employment and empower women as acknowledged experts in value addition.
9. *Kalajeera* as a farmers' variety needs immediate protection. Pending recognition of landraces for possible protection under the Protection of Plant Varieties and Farmers' Rights Act, 2001, other systems of protection like Ecomark, Agmark or Trade mark and the like should be considered. For every one of those options, producer status, their registered particulars for commercial sale, registered sites for production, storing and packing of seeds/grains are mandatory. Government can not only help SHGs to take up production but also provide the necessary formal mandates for obtaining protection rights like ECOMARK. This would help to reassure farmers that their variety and efforts are recognized at appropriate level and would, in turn, gear up quality seed/grain production.
10. Finally, MSSRF would be happy to share their technical expertise and coordinate with the Government line departments in all the above endeavours.

Finally, as a long term step, the Government of Orissa could consider organizing procurement of landraces from farmers at remunerative prices.

This would

- encourage more farmers to produce good quality seeds and grain in their fertile land in future,
- in turn, lead to voluntary and sustainable conservation, and gainful utilization of precious rice biodiversity that Jeypore tract is known for,
- unfold a viable pathway to produce seed and grain on a large scale, like that of *Kalajeera*, noting that expression of favourable traits of landraces is site-specific,
- help to form consortia of seed producing farmers in Jeypore tract that Government can use as a machinery to maintain quality and large-scale production, and
- develop home and international marketing arrangements, which will ensure that the tribal farmers get a remunerative price and an assured market.

Finally it would be useful to append known information on *Kalajeera* for any eventual needs in the context of benefit sharing.



*Kalajeera Cooked Rice*



*Kalajeera Paddy*



*Kalajeera Plant*

### ***Known Information on Kalajeera***

At three different points of time, MSSRF collected information and seeds of the landrace *Kalajeera* (Table 3) from the districts, Koraput and Malkangiri of Orissa State. It is likely that the collection made from Malkangiri has also originated in Koraput. Thus the purified *Kalajeera* using participatory research by

MSSRF has its origin in Koraput, though attempts are now being made to collect information on the same LR or its variants from other parts of Orissa.

**Table 3. Information on *Kalajeera* collected by MSSRF**

Attempt	First	Second	Third
Date	24.12.1993	28.09.95	24.12.98
Region	Jeypore tract	Kundura	Kundura
Seed donor	NA	Ram Krishna Sahoo	Mrs. Dama Khudi
Ethnic Group:	Koya (ST)	Non-tribal	Bhumia (ST)
Village:	Tondiki	Kundura	Khudiguda
Gram			
Panchayat:	NA	Kundura	Masigaon
Block:	NA	Kundura	Kundura
District:	Malakangiri	Koraput	Koraput
State:	Orissa	Orissa	Orissa
Collector:	N. Anil Kumar MSSRF	Smita Tripathy MSSRF	Bibhu P. Mohanty MSSRF Trilochan Ray MSSRF

*Kalajeera* belongs to the common species of rice, *Oryza sativa* and characterized by its known botanical descriptor traits. Its agronomic characters collected from farmers' fields in 2002 are given in Table 4. However, it is realized that the agronomic and morphological traits can vary over space and time and climate environments but within a narrow range.

**Table 4. Agronomic Characters observed in large plots during Kharif 2002**

Nursery raising	June 2nd week to July 1st week
Transplanting	21-25 days old seedlings
Maturity	135 – 140 days
Tillering	Very good
Panicle Density	Excellent
Synchrony of tillering	Perfect
Plant Height:	122 - 127cm
Tillers/plant:	5 - 8
Panicles/plant	5 - 8
Panicle length	27- 30 cm
Grains/panicle	185 - 225
Well-filled grains	90%
1000-grain weight:	15 g
Grain yield/hectare	upto 40 – 50 q/ha
Straw yield/hectare	upto 60 – 65 q/ha
Colour of the grain	black
Shape of the grain	small, oval
Length of the grain	~ 0.5 cm
Size of the kernel	~ 0.4 cm
Special characteristic	Scented, very good for pudding, used for festival and other special occasions by the tribals
Market Potential	Seed - Rs 8 – 10 per kg Grain - Rs 7.5 –8 per kg Rice - Rs 22 - 30 per kg

## State signs MoU with NAFED

### Contract farming to become reality soon

Special Correspondent

**BHUBANESHWAR:** The State Government on Wednesday signed a memorandum of understanding with the National Agricultural Cooperative Marketing Federation (NAFED) to establish market linkages for several agricultural commodities and pave the way for contract farming in the State.

With the signing of the MoU, NAFED will go ahead with a major expansion of its activities in the State and engage in commercial procurement of several commodities like groundnut, maize, sunflower, sesame and mungbean aromatic varieties of rice.

#### Market information

According to the MoU, NAFED will take up contract farming on a pilot basis for

• NAFED to engage in procurement of commodities

• Naveen Government to carry out more reforms in the farm sector

production of some of these commodities. The organisation will also provide market information through the Regulated Marketing Committee markets for the benefit of the farmers and will also assist in strengthening the existing infrastructure for agricultural marketing.

The MoU also envisages a role for the NAFED in bridging the gap in the supply of good quality seed of the appropriate varieties for various crops.

The MoU was signed by Cooperation Department Secretary Madhur Sarangi and NAFED Managing Director Rajiv Barjan in the presence of Chief Minister

Naveen Patnaik and Minister of State for Cooperation Surama Padhi.

The Chief Minister said the State had the potential for producing a variety of agricultural commodities of high quality. If proper market linkages could be created for different agricultural commodities, the farmers of the State would be benefited immensely, he added.

#### Supply chains

Mr. Patnaik said all legal hurdles for development of supply chains and market linkage had been removed by his government through the recent amendment of the Orissa Agricultural Produce

Markets Act. The Government was ready to carry out other reforms which might be necessary for taking the State's agriculture to the market making it nationally and globally competitive, he said.

He said the Government would encourage any company or firm engaged in marketing of agricultural commodities, including apples, fresh vegetables and fruit from the State.

Stating that a new beginning was made with the signing of the MoU, Mr. Patnaik said the Government would welcome participation of several market players in taking the State's agriculture to the national and global markets.

A large number of farmers from far-flung areas of the State participated in the MoU-signing ceremony held at the Secretariat. Several farmers greeted Mr. Patnaik.